



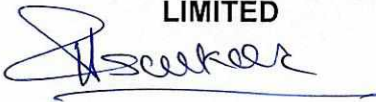
An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY		Phone: +91 431 257 7653	
NOTICE INVITING TENDER		Email : skaruna@bheltry.co.in , ajay@bheltry.co.in	
		Web : www.bhel.com	
TWO PART BID Tender to be submitted in two Parts	Enquiry Number: 2631700102	Enquiry Date: 27.11.2017	Due date for submission of quotation: 19.12.2017
You are requested to quote the Enquiry number date and due date in all your correspondence. This is only a request for quotation and not an order. Please note that under any circumstances both delayed offer and late offers will not be considered. Hence vendors are requested to ensure that the offer is reaching physically our office before 14.00 hrs on the Date of tender opening.			
Item	Description		Quantity
10	Hydro Testing Pump Unit 800 Bar as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or https://eprocure.gov.in/epublish/app)		01 No.
Important points to be taken care during submission of offer. 1. Compliance Form No: TRY/ IND/ 08 to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation. 2. Delivery period required is 4 months from the date of P.O. 3. Commissioning and performance prove out shall be done at BHEL Trichy by the supplier. 4. Time period required for commissioning and performance prove out shall be 3 weeks from the date of intimation by BHEL. 5. No EMD for this tender. 6. All updates, amendments, corrigenda, etc., (if any), for each tender will be posted only on the above websites from time to time, as and when required, until each tender is opened. There will be no publication of such updates, amendments, corrigenda, etc., through newspapers or any other media. BHEL's General guidelines / instructions (refer MM/CE/GENL/001- No EMD), compliance form and technical specification can be downloaded from BHEL web site http://www.bhel.com or from the Government tender website https://eprocure.gov.in/epublish/app (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference.			
(This is not an E-tender, please submit your offer in hard copies) Tenders should reach us before 14:00 hours on the due date. Tenders will be opened at 14:30 hours on the due date. Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present.		Yours faithfully, For BHARAT HEAVY ELECTRICALS LIMITED  AJAY V. ASALKAR Sr. MANAGER MM / Capital Equipment BHEL, Tiruchirappalli - 620 014 Sr. Manager / Capital Equipment / MM	

HYDRO TESTING PUMP UNIT (800 Bar)**PART A – QUALIFYING CRITERIA**

SI No	Requirements	Vendor's Response
1.0	QUALIFYING CRITERIA	
1.1	The BIDDER / VENDOR (OEM) shall have a minimum of TEN Years of Continuous Experience in the Design, Manufacture & Supply of “HYDRO TESTING PUMP UNITS – PLUNGER PUMP TYPE”. Vendor may indicate the actual no. of years of experience in the field. In case of Authorized dealer, Authorization certificate to be enclosed.	
1.2	Only those vendors (OEMs), who have manufactured, supplied and commissioned at least one “HYDRO TESTING PUMP UNIT” having all the following features: 1. Type: TRIPLEX PLUNGER PUMP 2. Drive: ELECTRIC MOTOR 3. Medium: Water 4. Pressure: 800 Bar or more in the past ten years are only eligible to quote. Such supplied machine should at present be working satisfactorily for at least one year after its commissioning (as on the date of opening of this Tender(First Date)). The name and contact addresses of the customers to whom the equipment has been supplied has to be furnished with details.	
1.3	Vendor has to submit at least one Performance Certificate from their customers in India, for satisfactory performance of “ HYDRO TEST PUMP ” as indicated in under clause 1.2 above , for a minimum period of one year (as on date of opening tender). For obtaining the Performance certificate, a suggestive format is provided.	
1.4	BHEL reserves the right to verify the above information provided by vendor. In case the information provided is found to be false/ incorrect, the offer shall be rejected.	
2.0	INFORMATION TO BE PROVIDED BY VENDOR	
2.1	The BIDDER / VENDOR to furnish Reference List of Customers, with complete address, details of contact person, where Hydro Test Pumps have been supplied in the past with Pump capacity details .	
2.2	Specify details of Hydro test pumps supplied to other units of BHEL, if any (Year of commissioning, Type, Pressure, Motor Capacity etc.)	
2.3	Details on SERVICE-AFTER-SALES Set-up in India including the Address of Agents / Service Centres in India.	
2.4	Any Additional data to supplement the manufacturing capability of the BIDDER for the subject equipment.	

Suggestive Format of Performance Certificate:

The performance certificate should be produced **on Customer's Letter Head.**

PERFORMANCE CERTIFICATE

- | | | |
|---|--|-----------------------------------|
| 1 | Supplier of the machine | : |
| 2 | Make & Model of the M/C | : |
| 3 | Month & Year of Commissioning | : |
| 4 | Machine Details | : |
| | a) Type | |
| | b) Drive | |
| | c) Medium | |
| | d) Max. Pressure (bar) | |
| 5 | Performance of the Machine
(Strike off whichever is not applicable) | : Satisfactory / Not Satisfactory |
| 6 | After sales service
(Strike off whichever is not applicable) | : Satisfactory / Not Satisfactory |
| 7 | Any Other remarks | : |

Date:

Signature & Seal of the Authority
Issuing the Performance Certificate

PART B**TECHNICAL SPECIFICATIONS FOR HYDRO TESTING PUMP UNIT (800 Bar)**

S.No.	PARTICULARS	SPECIFICATION DETAILS	OFFER by BIDDER
1.0.0	APPLICATION		
1.1.0	Purpose	a. To conduct hydro test in production shop floor for checking the weld joint quality of tubular products (coils and panels) and Pipes / Headers which are pressure parts of Boilers b. Medium of testing is Potable water (As defined in BIS standards-IS 10500) or Demineralized Water (DM water). The offered equipment must suit for both type of waters. Vendor to provide necessary filters if needed.	Vendor to Confirm
2.0.0	EQUIPMENT CONFIGURATION & OPERATIONAL SEQUENCE		
2.1.0	Operational Sequence	a. The offered equipment shall have two pumps: one centrifugal pump for pre filling and one triplex plunger pump for pressurizing. Both pumps shall be independently connected to electrical motors of suitable rating. b. The potable water line pressure will be around 2 bars and the DM water tank will be located at about 3 meters from the floor level. The inlet hose size shall be 1". c. Potable water line and DM Water line shall be connected to a common input line with suitable valves and this common line may be connected parallelly to the centrifugal pump and Triplex plunger pump such that the output from centrifugal pump will be used for pre-filling. The centrifugal pump will be switched off manually after pre filling. d. On closing the valve in front of the centrifugal pump, the water will enter in to the plunger pump for pressurizing. The plunger pump will be switched on manually. e. The high pressure outlet line from plunger pump shall have a 3/8" quick fixing connector. f. While the plunger pump is on, the centrifugal pump will not be running. g. On reaching the desired test pressure, the plunger pump will be switched off manually. h. Each pump shall have the necessary valves (viz., Automatic unloader valve, water inlet & outlet valve, safety valve, Bye-pass valve, Pressure relief valve & pressure gauges etc. interconnected with suitable piping, isolation valve, non-return valve, gate/stop valve, bleed valve, etc.) and fittings to achieve the desired results.	Vendor to Confirm
2.2.0	Pre filling unit	This unit shall have the following elements in position to facilitate the pre-filling operation. a. Centrifugal Pump b. Pressure Gauge at Pump Outlet c. Isolating Valve	

		d. Non-Return Valve e. Stop Valve at Pump Inlet f. By-Pass Valve g. Pressure Switch h. Inter-Connecting Tubing [diameter & pressure rating to suit application and intermittent tube length shall suit the configuration]	
2.3.0	Pressurizing unit	This unit shall have the following elements in position to have a better flexibility on pump operation, to suit varying testing conditions : a. Triplex Plunger Pump b. Pressure Gauge at Pump Outlet c. Isolating Valve d. Pressure Regulating cum Automatic Unloader Valve e. Check Valve f. Carbon Steel Pulsation Dampener g. Non-Return Valve h. Stop Valve at Pump Inlet i. Bleed Valve for Flow Control j. By-Pass Valve k. Inter-Connecting Tubing [diameter & pressure rating to suit application and intermittent tube length shall suit the configuration] l. Safety valve	
2.4.0	Electric Motors	The centrifugal and plunger pumps shall have independent on/off facility with suitable H.P. Motors, Star-Delta Starter and Reduction Gear Box (for plunger pump) and with all the required accessories.	
2.5.0	Portability/Mobility	The complete unit shall be mounted on a portable 4 wheel trolley with handle with sufficient spacing, lifting hooks and swivelling (front) cast iron wheels lined with hard rubber.	
2.6.0	Circuit Diagram	A Circuit diagram has to be submitted with the offer, showing the location of various elements with identification/ratings, to meet the requirements mentioned in Clause No.2.1.0.	
3.0.0	PLUNGER PUMP SPECIFICATIONS		
3.1.0	Working Principle	High Pressure Triplex Reciprocating/Positive Displacement	
3.2.0	Testing Pressure of jobs	800 kg/cm ²	
3.3.0	Discharge Capacity	Not less than 15 Lits./Min.	
3.4.0	Type	Horizontal & Portable	

3.5.0	Number of Stages	Single Stage	
3.6.0	Speed	Vendor to specify	
3.7.0	Pump Body	Material - "A" Grade Cast Iron	
3.8.0	Pump Head	Material : EN-9 Steel	
3.9.0	Plunger material	High Carbon Steel [Hard Chrome Plated and Ground Finished] Or Stainless steel	
3.10.0	Crankshaft	Material : EN-24 Steel	
3.11.0	Connecting Rods	Material -Forged Carbon Steel	
3.12.0	Connecting Bearings	Material : Bi-Metal	
3.13.0	Gudgeon Pins	Material - High Carbon Steel	
3.14.0	Cross heads	Material - Cast Iron	
3.15.0	Valve &Valve Seating	Material - S.S. with STELLITED Valve Seats	
3.16.0	Sealing Elements	Reinforced Synthetic Rubber Hydraulic Sealing 'V' Rings.	
3.17.0	Frame	M.S. Fabricated	
3.18.0	Bearings	Heavy Duty Ball Bearings of SKF /TIMKEN/NTN/IKO / NBC	
3.19.0	Glands	Material - Gun Metal	
3.20.0	Crankshaft Bearings	Ball / Roller Bearings	
3.21.0	Pressure Regulator-cum- Unloader Valve	Material - Stainless Steel Gr 410	
3.22.0	Bye-pass Valve	Material - Stainless Steel Gr 410	
3.23.0	Check Valve / Non-Return Valve	Material - Stainless Steel Gr 410	
3.24.0	Pressure Relief Valve	Material - Stainless Steel Gr 410	
3.25.0	Isolating Valve	Material - Stainless Steel Gr 410	
3.26.0	Safety Valve	Material - Stainless Steel Gr 410 (Spring Loaded type)	
3.27.0	Pump Delivery Control	A pressure regulator-cum-automatic unloader valve and the safety valve are to be provided at the delivery end of the Plunger Pump to regulate the pressure from zero to the required pressure within the rated capacity.	
3.28.1	Pulsation Dampener	A Carbon Steel Pulsation Dampener on the delivery line shall also be provided for smooth discharge / output during continuous operation.	
3.28.2	Valve Seats	All valve seats are to be STELLITED for long life.	
3.28.3	Hydraulic Sealing	Spring loaded stuffing box for self-tightening of the hydraulic sealing 'V' rings.	
3.28.4	Lubrication	Flooded crank with splash lubrication system for long life and independent front inspection cover for easy replacement of 'V' seals and plungers. Cross head anti-chamber for salvage of excess lubricant oil.	

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S.No.	PARTICULARS	SPECIFICATION DETAILS	OFFER by BIDDER
3.28.5	Plunger Assembly	Plunger guide bush and glands are to be provided with TURCITE SLYDRINGS.	
3.28.6	Gear Box	Externally coupled Reduction Gear Box for plunger pump.	
4.0.0	ELECTRICAL (GENERAL)		
4.0.1	Input Supply	BHEL will provide input power supply at one point only and the supplier has to take care of all other electrical distribution network required for the Station.	
4.0.2	Cabling	All electrical motors, limit switches etc, on the machine shall be wired using PVC sheathed copper cable, running in conduits and converging to common terminal block.	
4.0.3	Components	All components/devices/terminals are identified with numbered ferrules	
4.0.4	IP protection	IP54 protection for all electrics.	
4.1.0	ELECTRIC MOTOR SPECIFICATION for PLUNGER PUMP		
4.1.1	Motor Type	TEFC, Squirrel Cage Induction Motor of EFF1/IE2, IP55	
4.2.2	Motor Rating	Around 40 H.P., 1440 RPM – Vendor to specify the required HP to achieve the flow and pressure.	
4.3.3	Input power	415 $\pm$ 10% V, 50 $\pm$ 3%Hz, 3 Phase AC, 3 Wire System (with out neutral)	
4.4.4	Motor Make	ABB, SIEMENS/CROMPTON/BBL/GE/MITSUBISHI/TOSHIBA/KEC/ BALDOR	
4.5.5	Motor Starter	STAR-DELTA starter of SIEMENS / L&T make.	
5.0.0	REDUCTION GEAR BOX FOR PLUNGER PUMP		
5.1.0	Make	RADICON / ALLROYD / GREAVES /BONFIGLIOLI	
5.2.0	Reduction Ratio	Bidder to Specify (to suit the requirement)	
6.0.0	CENTRIFUGAL PUMP SPECIFICATIONS		
6.1.0	Discharge Capacity	About 180 Lits./Min.	
6.2.0	Total Head	About 24 Meters	
7.0.0	ELECTRIC MOTOR SPECIFICATION for CENTRIFUGAL PUMP		
7.1.0	Motor Type	TEFC, Squirrel Cage Induction Motor, EFF1/IE2, IP55	
7.2.0	Motor Rating	2.0 H.P. 1440 RPM	
7.3.0	Input Power	415 $\pm$ 10% V, 50 $\pm$ 3%Hz, 3 Phase AC, 3 Wire System (with out neutral)	
7.4.0	Motor Make	ABB, SIEMENS/CROMPTON/BBL or any reputed make acceptable to BHEL	
7.5.0	Motor Starter	STAR-DELTA starter of SIEMENS / L&T make.	

8.0.0	PRESSURE GAUGES		
8.1.0	Pressure Gauges	a. Pressure Gauge 0 to 600 kg/cm ² : 2 Nos. b. Pressure Gauge 0 to 800 kg/cm ² : 2 Nos. c. Pressure Gauge 0 to 1000 kg/cm ² : 2 Nos. [These Gauges except the one fitted on the testing unit shall be supplied as loose items]	
8.2.0	Pr. Gauge size	The gauge dial size shall be min 150 mm and accuracy shall be specified by the bidder.	
8.3.0	Make & Type	FIEBIG / MANOMETER / H.GURU make and the dial fixing shall be of BEZEL RING type with three screws. The gauges offered shall be glycerine filled.	
8.4.0	End Connections	The connector end shall have M20 x 1.5mm male thread and the gauge fixing shall be of bottom entry type.	
9.0.0	HIGH PRESSURE FLUID HOSE		
9.1.0	Type and End-Connections	High Pressure flexible hose (suitable for a test pressure of 800 bar and min burst pressure not less than 2500 bar) with 3/8" quick fixing connector at the end of high pressure outlet line.	
9.2.0	Hose Length	Overall Length – 5.0 metres with Quick-Fix and Disconnect 3/8" End Connector.	
10.0.0	PAINTING		
10.1.0	Painting	Painting of Equipment shall be RAL 6011 Apple Green (Polyurethane Paint)	
11.0.0	SAFETY FEATURES		
11.0.1	Following safety features in addition to other standard safety features should be provided on the machine:		
11.0.2	Pipe & Cables	All the pipes, cables etc. should be well supported and protected.	
11.0.3	Moving parts	All the rotating/ Moving parts should be statically & dynamically balanced to avoid undue vibrations and suitably guarded.	
11.0.4	Earthing and shock prevention	Earthing of the equipment and motor. ELCB with 100mA.	
12.0.0	GENERAL		
12.1.0	Technical offer details	The offer shall contain clear Technical details for all the clauses of this specification. The offer will be liable for rejection, without offer details.	
12.2.0	G.A. Drawing	The offer shall contain a detailed General Arrangement Drawing with part Nos, description/specification and Material, and description in the Bill of material.	

12.3.0	Reference List	The offer shall positively contain the list of customers to whom pumps of 800 bar or more have been supplied and working satisfactorily. Furnishing latest 10 suppliers will be enough.	
12.4.0	List of Spares	The offer shall contain a list of electrical and mechanical spares recommended for two years of continuous service. Vendor to provide the complete list including the following also: a) Non return valve-1 No b) Pressure control valve (Pressure regulating valve)-1 No c) Pressure relief valve-1 No d) Pressure bearings (1 No in each type) -1 set e) Plunger rod -1 No f) Safety valve-1 No g) Complete set of seals and wiper seal (1 No in each type) -1 Set h) Complete set of O rings and seal rings (1 No in each type) -1 Set i) Complete set of gaskets (1 no in each type) -1 set j) Valve seat – 1 set k) Pressure pump mechanical coupling -1 set l) Bushing for connecting rod -2 Nos m) Replaceable insert for connecting rod-2 Nos n) Shim set for connecting rod assembly – 1 Set o) Pressure switch -1 No p) One set of contactors, MPCB and relays (1 No in each type)-1 Set q) Fuse (1 No in each type)-1 No	
12.5.0	Unpriced Price Bid	The Technical Bid shall contain the UNPRICED PRICE BID giving the list of items quoted with unit rates, including the spares and accessories.	

12.6.0	INSPECTION	The pump shall be offered for inspection by BHEL Engineers at supplier's works before despatch. Design features and Maximum test pressure of the pump unit shall be demonstrated by a suitable specimen test body by the supplier at Supplier's works. The following documents have to be submitted at the time of pre dispatch inspection: a) Hydro-pump test certificate b) Hydro-pump guarantee certificate c) Test Certificate for electric motors d) Test Certificate for gear box e) Guarantee certificate for gear box f) Test certificate for all material specified	
12.7.0	COMMISSIONING	The supplier shall depute his representative for commissioning and performance prove-out of the equipment at BHEL works. Only successful prove out will be reckoned as commissioning.	
12.8.0	DOCUMENTATION	Three Hard copies (bound volume) of Operation and Maintenance Manual along with details on bought-out items, Assembly and sub-assembly drawings, specifications and make of electrical elements, etc., to be supplied along with the supply of machine. The O&M Manual should contain the following	
		a) GA Drawing of the Pump(3 Hard copies) b) Sub-Assembly Drawings (without dimensions) for sub-systems for maintenance purpose (3 Hard copies) c) Electrical Wiring Drawings(3 Hard copies) d) Catalogues of all bought out items. (3 Hard copies) e) Hydro-pump test certificate f) Hydro-pump guarantee certificate g) Test Certificate for electric motor h) Test Certificate for gear box i) Guarantee certificate for gear box j) Test certificates for all materials specified k) One set all the above documents in CD	

12.9.0	MAKES OF BOUGHT OUT ITEMS	
	Makes of all bought out items shall be as follows unless otherwise specified elsewhere 1. Hydraulic Hoses: GATES / PARKER / AEROQUIP 2. Hydraulic valves & Pumps: REXROTH / EATON / VICKERS 3. Polyurethane Tubes & One touch fittings: FESTO / SMC / REXROTH / PARKER 4. Pneumatic valves & pumps System: FESTO / SMC 5. Hydraulic seals, Spring loaded Oil Seals & O Rings: PARKER / MARKEL / SIMRIT / FREDUNBERG / BUSHAK & SHAMBAN/ HUNGER/ HALLITE/ JAMES WALKER 6. Reduction Gear Box: ELECON / BONFIGLIOLI / MAKISHINKO / SUMITOMO /SEW 7. Pumps: BE / SUGUNA / SEAPUMP / KSB / RAJAMONI 8. Pressure gauges: REXROTH / WIKA / WAREE 9. All couplings with guards: SKF / FENNER / HYDAX 10. Hydraulic Fittings: PARKER / SWAGELOC / HYLOC 11. Motors: (ENERGY EFFICIENT EFF I / IE2) ABB / SIEMENS/ BALDOR/GE/CG/ KEC/ BBL/ TOSHIBA/MITSUBISHI 12. Contactors: SIEMENS / L&T / SCHENIEDER / TELEMECHANIC 13. Push buttons and selector switches: SIEMENS / TELEMECHANIC 14. Bearings / Pillow block / Plummer block: SKF / NTN / TIMKEN / IKO 15. Geared couplings: WMI / FENNER / ALFEX / SKF 16. Fasteners: (GRADE: 10.8/12.9 AS PER IS.2269/IS 1367): TVS / UNBRAKO Any other makes recommended by the supplier shall be approved by BHEL Engineers Before Manufacturing.	
13.0.0	GUARANTEE	Vendor shall provide a guarantee for a period of 12 months from the date of Commissioning of the equipment or 18 months from the date of dispatch, whichever is earlier